N° 22,226 A.D. 1902

Date of Application, 13th Oct., 1902—Accepted, 23rd Apr., 1903

COMPLETE SPECIFICATION.

Improvements in Apparatus for Impregnating Air with Medicinal Vapors and the like.

I, Dr. Moritz Saenger, of Kaiserstrasse No. 76ª, in the City of Magdeburg, in the Province of Saxony, in the German Empire, Medical Practitioner, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The subject of my invention is an apparatus by means of which more or less easily volatilisable substances can be mixed in vaporous or gaseous condition with the air of the room, or other air being inhaled, without having first to be mingled with other media, or dissolved in certain liquids. The spray apparatus at present in use, do not answer the purpose which I have in view, inasmuch as the substance, though in very finely divided condition, is, taken in the aggregate, nevertheless in the form of drops of liquid.

The apparatus consists of a steam-boiler, supended in which, but not communicating with the interior, is a receptacle for the drug to be volatilised, in such manner that the steam completely surrounds and heats the suspended receptacle. On the top of the boiler and of the receptacle respectively, outlet-pipes, ending each in a narrow nozzle, are provided, meeting at a point, similarly to the nozzles, of a spray-apparatus. The steam issuing from the boiler nozzle, sucks up the vapor of the substance being volatilised, becomes saturated with it and distributes it throughout the air of the room.

My invention is illustrated by the annexed drawing, in which

Fig. 1 shows a vertical section of one form of the new apparatus, and

Fig. 2 a vertical section, drawn to a smaller scale, of a modified form of boiler and internal receptacle.

a is the steam-boiler, and *b* a receptacle so arranged within the boiler, that it is surrounded by the steam, or it may be hot water itself. *c* is a pipe secured to the cover of the vessel *a*, and so bent that its top portion lies at a right angle to the lower part and terminates immediately above the mouth of a pipe *d* forming the exit of the receptacle *b*. The ends of the pipes *c*, *d* are formed as fine nozzles. The receptacle *b* has an inlet *f*, through which the material to be volatilised, either in solid or liquid form, can be introduced, in order that it may accumulate at the bottom of the receptacle. Amongst the materials suitable for introduction in this manner, may be mentioned, volatile oils, balsams, resins, carbolic acid (both crystalline, and mixed with water), creosote, metallic mercury, *etc.*

When heat is applied to the boiler *a* by means of a lamp A, or by any other suitable source, the steam envelops the receptacle *b* and volatilises the material therein. At the same time the steam will issue from the pipe *c* in the direction of the arrows (Fig. 1), and in escaping will suck up the vapor from the receptacle *b*. The jet of steam thus becomes saturated with the vapor of the drug being volatilised, so causing the air of the room or the like to be impregnated with the same.

As already remarked, and as will be seen from the drawing, there is no passage

connecting the inside of the receptacle *b* with that of the boiler *a*, so that the material being volatilised cannot escape into the boiler.

With my apparatus a continuous current of fresh, non-saturated air passes over the substance being volatilised, since the air sucked out of the receptacle *b* is being constantly replaced by fresh air flowing in through the aperture *f*.

Now, it is well known that the volatilisation of any material by contact with fresh air, not impregnated with the volatile constituents of the substance, is favorably influenced; whereas such volatilisation is unfavorably affected when the air is impregnated with these constituents. Thus in this respect also, it follows that the present apparatus possesses great advantages over other like apparatus.

The advantages of my apparatus may be summed up as follows:

1. Thorough volatilisation of the substances employed.
2. The substance used, apart from neutral steam, remains wholly unmixed with any other material.
3. The substances can be introduced into the inner receptacle in their natural solid or liquid state.
4. The consumption of the substances is most economical.
5. By employing my apparatus, the substances used are mingled with the air in gaseous condition, so that they are enabled to penetrate the respiratory apparatus to just as great an extent as the latter, *i.e.*, not only into the smaller and smallest bronchi, but also into the pulmonary alveolus.

Solutions of drugs, on the other hand, to however fine a spray they may be reduced by a distributor, scarcely ever penetrate into the respiratory apparatus further than the front parts of the bronchial ramification, as is shown in my contributions to the "Münchener Medizinische Wochenschrift," No. 21, 1901, and to "Virchow's Archiv," Vols. 164 and 167.

With the assistance of the present apparatus, therefore, a number of drugs, the excellent curative action of which in catarrhs has been known from antiquity (*e.g.*, turpentine oil and Peru balsam) can be applied for inhalation purposes in a far more effective manner than has hitherto been possible.

By the employment of my improved apparatus with such drugs in the treatment of various forms of disease of the air-passages most striking cures have been effected.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

Apparatus for impregnating air and for inhalation purposes, comprising a boiler having a nozzle-outlet, and a receptacle contained within the said boiler but not communicating with it, having an air-inlet, and a nozzle-outlet located closely adjacent to the boiler-outlet, in such manner that the steam issuing from the latter sucks up the vapor of a substance under volatilisation contained in the inner receptacle and carries it off with it, all substantially as described.

Dated this 13th day of Octr 1902

BOULT, WADE & KILBURN.
Agents for Applicant.

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SAENGER'S Complete Specification. / 1 SHEET /

Fig. 1.

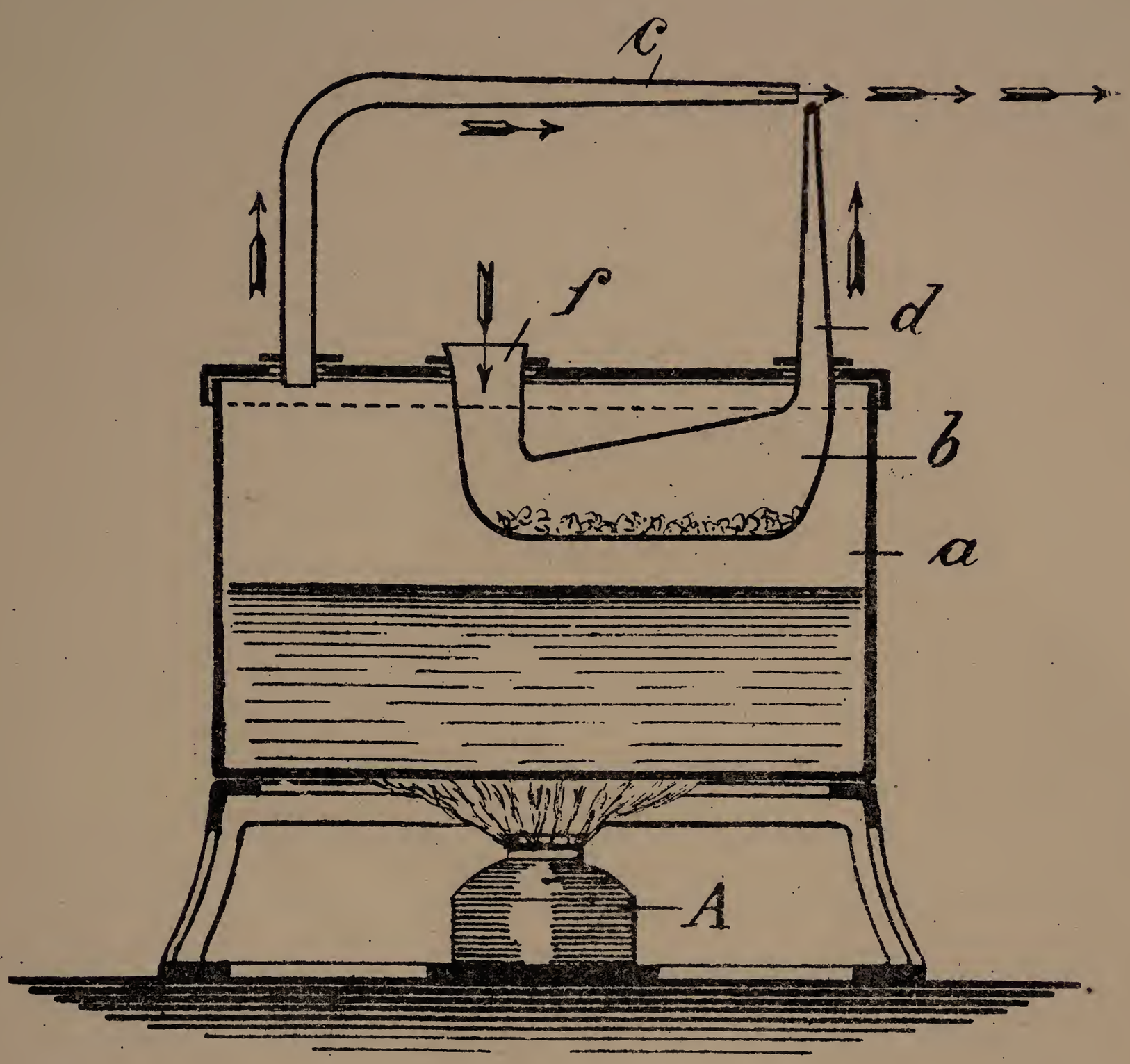
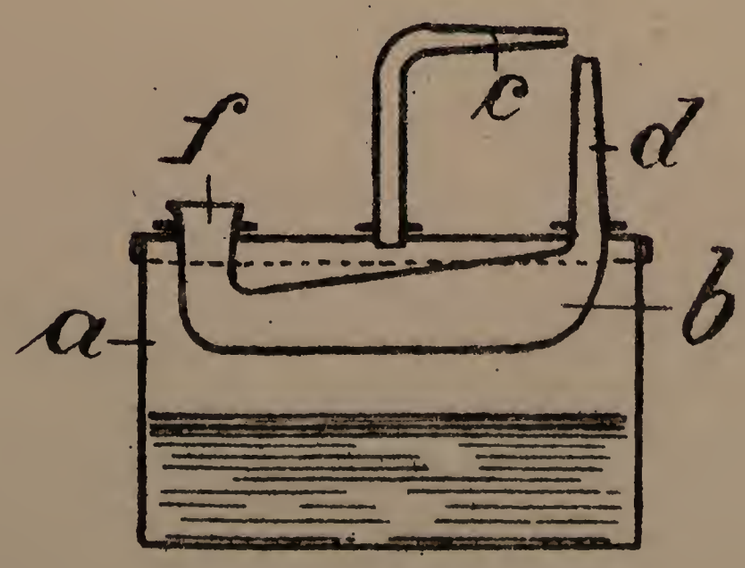


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

Malby&Sons, Photo-Litho.